

Growth, Inequality, and Poverty

Looking beyond Averages

Martin Ravallion

One side in the current debate about who benefits from growth has focused solely on average impacts on poverty and inequality, while the other side has focused on the diverse welfare impacts found beneath the averages. Both sides have a point.



Summary findings

The evidence is compelling that the poor in developing countries do typically share in the gains from rising aggregate affluence and in the losses from aggregate contraction. But how much do poor people share in growth? Do they gain more in some settings than others? Do some gain while others lose? Does pro-poor growth mean more or less aggregate growth?

Recent theories and evidence suggest some answers, but deeper microeconomic empirical work is needed on growth and distributional change. Only then will we have a firm basis for identifying the specific policies and programs needed to complement and possibly modify growth-oriented policies.

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Growth, Inequality and Poverty: Looking Beyond Averages

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1. Introduction

The recent backlash against globalization has given new impetus to an old debate on whether the poor benefit from economic growth. The following quotes from *The Economist* seem to represent well the two main opposing views on the matter:

“Growth really does help the poor: in fact it raises their incomes by about as much as it raises the incomes of everybody else. ... In short, globalization raises incomes, and the poor participate fully.” (*The Economist*, May 27 2000, p.94.)

“There is plenty of evidence that current patterns of growth and globalization are widening income disparities and hence acting as a brake on poverty reduction.” (Justin Forsyth, Oxfam Policy Director, Letter to *The Economist*, June 20, 2000, p.6.)

Here we seem to have irreconcilable positions about how much the world’s poorest benefit from the economic growth that is fuelled by greater openness to foreign trade and investment. *The Economist*’s own article is adamant that such growth is poverty reducing, drawing on a recent study by Dollar and Kraay (2000) which found that average incomes of the poorest quintile moved almost one-for-one with average incomes overall. In commenting on *The Economist*’s article, Oxfam’s Policy Director seems equally confident that rising inequality is choking off the potential benefits to the poor, in seeming contradiction to the Dollar and Kraay results, and earlier results in the literature pointing in the same direction.²

However, as this article will argue, there is some truth in both the quotes above. Indeed, it is not difficult to reconcile these two views, with important implications for development policy. In critically reviewing the arguments in this debate, I will draw heavily on evidence from a new compilation of household level data for developing countries. The following section discusses these data, while section 3 looks at what they show about how much the poor benefit have

² Earlier contributions include Fields (1989), World Bank (1990, Chapter 3), Squire (1993), Ravallion (1995), Ravallion and Chen (1997) and Bruno et al., (1998).

benefited from rising average living standards in developing countries, and how much they have lost from contractions. Section 4 then points to some potential pitfalls in interpreting the implications of that evidence for development policy. The article then considers in more detail the ways in which distribution matters to the outcomes for the poor — both as an impediment to growth (section 5) and as an impediment to poverty-reducing growth (section 6). The penultimate section draws out some implications for understanding global progress against poverty. Section 8 concludes with some observations about directions for future research.

2. New evidence on an old debate

Data on poverty and inequality are obtained from household surveys, in which random samples of households are interviewed using a structured questionnaire. The main data I will draw on here relate to “spells” defined by the periods of time spanning two successive household surveys for a given country. From the latest update of the data base on which the World Bank’s tabulations of income distribution are based (Chen and Ravallion, 2000), one can assemble two or more household surveys over time for about 50 developing countries, to create 120 such spells, mostly in the 1990s.³ The estimates of poverty and inequality measures were done from the primary data (rather than using secondary sources), so that it was possible to eliminate obvious inconsistencies. Comparisons over time between any two surveys use the same indicator of economic welfare, which was either income or expenditure per person. Half the time it is expenditures. The underlying household surveys are nationally representative and in almost all cases include imputed values for income or consumption-in-kind from own-farm output.

³ The latest version of the data set can be found at <http://www.worldbank.org/research/povmonitor/>. This web site is updated regularly; the results in this paper are based on the data set at mid-2000, as used in Chen and Ravallion (2000).

The data are not without problems; indeed, there are many concerns, related to underlying differences (between countries and over time) in the original household surveys that were the source of the data on household incomes and expenditures. There are also concerns about how best to deflate nominal values for changes in the cost-of-living; the available consumer price indices do not always reflect well the spending behavior of the poor. On top of these problems, there is likely to be underestimation of incomes and spending in household surveys, particularly (but probably not only) by the rich, who often do not want to participate, or are hard to reach, or deliberately understate their incomes or spending. Nothing much can be done to fix these problems. However, one can still take partial account of the data problems by using methods of analysis that are not likely to be too sensitive to the errors in the data.

In examining the effect of growth on poverty there is also a question: “growth of what?” We want to know whether the poor are sharing in the growth in average living standards. However, there are two quite distinct, and largely independent, sources of data on a country’s average welfare, as measured by households’ command over commodities. The level of private consumption expenditure (PCE) per capita from the national accounts (NAS) is widely used for this purpose. On the other hand, measures of average household living standards are available from the same household surveys used to measure poverty.

These two measures do not agree in general, either in the levels and in their growth rates. This is not surprising, given the differences in coverage, definitions and methods. There are the aforementioned problems in survey data. But national accounts have their own data problems. For example, PCE is determined residually in the NAS, after accounting for other uses of domestic output and imports at the commodity level. It is not generally possible to separate the spending by non-profit institutions (such as NGOs, religious groups, and political parties) from

that of households. In many developing countries, the non-household sectors that are implicitly lumped together with households appear to be sizable and possibly growing, so PCE may well overstate the growth rate in household welfare. There are also consistency problems between the two sources, such as arising from imperfect matching between survey dates (which also vary between types of commodities, according to assumed recall periods) and the accounting periods used in the NAS.

There are differences in the extent of these data concerns both between regions and between types of surveys. India stands out as an unusual case in the 1990s. The growth rates in consumption that we have seen in the national accounts for India in the 1990s have not been reflected in the main national household survey of expenditures on consumption (the National Sample Survey). This divergence is naturally putting a break on how much poverty reduction we are seeing in the survey data during this period of economic growth (Datt, 1999). At the same time, measured inequality is increasing (Ravallion, 2000c), which is not helping either.

How one interprets the data for India depends critically on why we are seeing this rising divergence between the two data sources on consumption. One interpretation assumes that consumptions of the poor are being underestimated by the surveys, and concludes that poverty is falling much faster than the survey data suggest (Bhalla, 2000). While agreeing that the surveys are probably missing a share of the consumption gains, an alternative interpretation says that the problem is much more to do with consumption by the nonpoor, and that the surveys are more likely to be underestimating the rate of increase in inequality.

The latter interpretation would appear to accord with our limited knowledge of the problems of under-reporting and non-compliance in consumption and income surveys. The fact that the divergence is correlated with growth (over time, and across states if India) also suggests

a strong income effect on survey underestimation, which one expects to hold also between households (Ravallion, 2000c). Nonetheless, the problem is unlikely to be confined solely to the non-poor, and the surveys could well be underestimating the rate of poverty reduction in India.

If one is willing to discount income (rather than expenditure) surveys for measuring average levels of economic welfare, and if one puts aside the (highly problematic) data from the transition economies of Central and Eastern Europe for growth rates, then the tests for bias reported in Ravallion (2000a) do not point to a systematic overall discrepancy between national accounts and survey-based estimates of aggregate consumption. (This holds in the aggregate across countries; large discrepancies can still be found for specific countries, in both directions.) Nonetheless, it is notable that in the aggregate, and for most regions, the implied elasticity of the survey mean to NAS consumption growth is less than one (even when the difference is not statistically significant). This could well be an attenuation bias due to measurement error. By implication, elasticities of measured poverty to NAS growth will be less than those implied by the measured elasticities of poverty to growth in the survey mean.

The fact that the mean from the surveys is consistent with the data used to calculate poverty measures makes it an appealing candidate for measuring the growth rate. However, this creates a further problem, namely that survey measurement errors can create a spuriously high correlation between poverty measures and the means of the distributions on which those measures are based. The fact that there is measurement error in the surveys (probably creating a spurious correlation between measured poverty and the measured mean) speaks to the use of econometric methods that are robust to this type of problem. Examples will be given later.

There is also a question of how inequality should be measured. The most popular measure of inequality is the Gini index, ranging from zero (when everyone has the same income)

to 100% (when the richest person has all the income). That is the measure I will use here. There are many other possible measures, using different weights on income levels (relative to the mean) to those used by the Gini index, based on ranks. There is also a natural measure of distribution as relevant to poverty, namely the distributional component of the poverty measure, obtained by setting the poverty line at a constant proportion of the mean (Datt and Ravallion, 1992). However, for the purpose of the present discussion, I will rely solely on the Gini index.

3. Poverty reduction and growth in average living standards

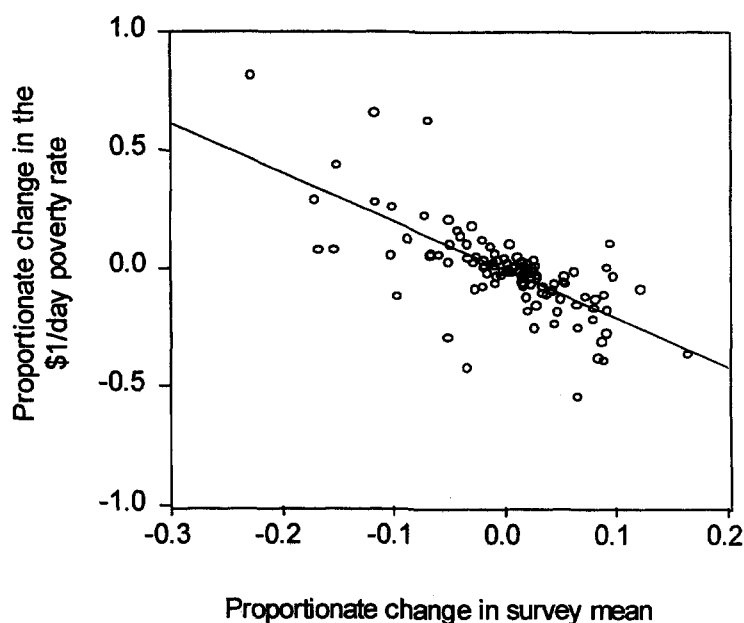
Earlier versions of this data set indicated little or no correlation between growth in average household income per person and the change in measured inequality (Ravallion, 1995; Ravallion and Chen, 1997). This also holds in the new version of the data set; the correlation coefficient between the annualized change in log Gini index and the annualized change in the log of the survey mean is -0.09 . Similarly, Dollar and Kraay (2000) find that, across countries, log mean income of the poorest quintile (inferred from distributional shares and GDP per capita) changes one-to-one with the overall log GDP per capita. This is equivalent to saying that the share of the poorest quintile is uncorrelated with log GDP per capita.

However, it does not follow that growth raises incomes of the poor “.. by about as much as it raises the incomes of everybody else” (in the quote from *The Economist* at the beginning of this article). Finding that the share of income going to the poor does not change on average with growth does not mean that growth raises the incomes of the poor as much as for the rich. Given existing inequality, the income gains to the rich from distribution-neutral growth will of course be greater than the gains to the poor. For example, the income gain to the richest decile in India will be about four times higher than the gain to the poorest quintile; it will be 19 times higher in

Brazil.⁴ The fact that, on average, the rich will tend to capture a much larger share of the increment to national income from growth than the poor is directly implied by the empirical results in the literature, including Dollar and Kraay (2000).

Of course, if distributional shares do not change on average then the poor will gain in absolute terms: growth is poverty reducing, and contraction is poverty increasing. Figure 1 plots the proportionate changes in the poverty rate against the growth rate in average income. The poverty measure is the proportion of people living below \$1/day (using 1993 Purchasing Power Parity exchange rates), though other poverty lines show a similar pattern.

Figure 1: Poverty tends to fall with growth in mean household income or expenditure



Note: Based on data for 47 developing countries in the 1980s and '90s (multiple spells for most countries). The horizontal axis is the annualized change in the log of the real value of survey mean; the vertical axis is the annualized change in the log of the percentage of the population living below \$1/day at 1993 Purchasing Power Parity. The figure has been trimmed of extreme values, but this does not alter the line of best fit indicated.

⁴ These are based on income shares for Brazil in 1996 and consumption shares for India in 1997; in both cases the ranking variable is per capita (World Bank, 2000a).

The figure also gives the regression line that fits the data best. The line virtually passes through the origin, implying that the average rate of poverty reduction at zero growth is zero — consistent with the pattern of zero change in inequality on average. The line has a slope of -2.50 with a (heteroscedasticity corrected) standard error of 0.30 ($R^2=0.44$). This can be thought of as the “growth elasticity” of poverty, since the two variables are proportionate changes. Thus for every one percent increase in the mean, the proportion of the population living below \$1/day (at 1993 Purchasing Power Parity) falls by an average of 2.5%. For example, in a large enough sample of countries for which exactly half of the population lives below \$1/day, a 3% increase in the mean will bring that proportion down to about 0.46. And a 3% fall in mean income will push the poverty rate up to about 0.54 on average.

A similar pattern exists if one uses PCE per capita from the national accounts instead of the mean from the survey, although then the correlation is not as strong, and the elasticity is -1.96 with a considerably higher standard error of 0.89 (though still statistically significant at the 3% level). This is partly because of measurement problems, such as the fact that survey periods do not match exactly the periods used in National Accounts. And it is partly because changes in PCE can arise solely from the non-household sector of the economy (notably spending by nonprofit organizations).

A possible concern about this estimate of the average “growth elasticity” of poverty is that there may be common (negatively correlated) measurement errors in the rate of poverty reduction and the rate of growth in the survey mean. If the second survey overestimated the mean for some reason (relative to the first survey) it will probably underestimate poverty. To check for a bias due to this problem, I used the growth rate in private consumption per capita from the national accounts as the instrumental variable for estimating the regression line in

Figure 1, i.e., as the predictor of the growth rate in the survey mean. This assumes that the errors in the national accounts growth rate are uncorrelated with the errors in the growth rates based on the survey means. However, this instrument is not valid for the countries of Eastern Europe and Central Asia for which there is no correlation between the growth rates between surveys and those from the national accounts (Ravallion, 2000a). So I dropped the data for that region. This estimation method gave a growth elasticity of -2.07 with a standard error of 0.72 (significant at the 1% level).

Therein lies the truth in the first quote at the start of this article. The incidence (and depth) of absolute poverty in developing countries tends to fall with growth. This is not a new point; indeed, the empirical relationship has been well known for some time (Bruno et al., 1998, provide a survey). But it is worth emphasizing in the context of the recent debate.

Looking behind the averages, however, the experience is diverse. Even ignoring extreme values, the 95% confidence interval of the last estimate of the growth elasticity implies that a one percent rate of growth in average household income or consumption will bring anything from a modest drop in the poverty rate of 0.6% to a more dramatic 3.5% annual decline.

Underlying this heterogeneity in the gains to the poor from a given rate of growth lies the fact that during spells of growth or contraction one sees changes in inequality over time within most developing economies — changes in both directions. Developing countries with a tendency for rising inequality since the late 1980s include Bangladesh, China, Colombia, India, the Philippines and Viet Nam; trend declines are found in Brazil, Honduras, Jamaica and Thailand (Ravallion, 2000b). The changes in a summary measure such as the Gini index often seem small in magnitude. However, this can be deceptive, since even small changes in overall distribution can matter greatly to how much the poor share in growth.

There have been plenty of cases of rising inequality during spells of growth. Indeed, inequality increases about half the time (Ravallion and Chen, 1997). Therein lies the truth in the second quote at the beginning of this paper. There is ample evidence to support concerns that high or rising inequality is putting a break on the prospects for poverty reduction through growth. The first quote implicitly averages over this diversity in initial inequalities and how they are changing over time; the second looks not at the averages, but the cases in which high or rising inequality dulls the gains to the poor from growth.

4. ‘No correlation’ does not mean ‘no impact’

The data suggest little or no correlation between growth and changes in inequality. The same holds for growth promoting reforms for which significant correlations have rarely been found, one way or the other. This is confirmed by Dollar and Kraay (2000) who find little or no correlation between changes in inequality and policy reforms including greater openness of the economy.⁵

While this is an important finding, there are a number of reasons to be cautious in drawing implications for policy. One possible reason for the apparent distribution-neutrality of reform (on average) is that changes in inequality are not always well measured. For example, although the data set used above has been constructed to try to eliminate as many of the problems as possible, there are still changes in survey design that add noise to the measured changes in inequality.

⁵ Dollar and Kraay do find that stabilizing against inflation is associated with lower inequality. This is consistent with other evidence that inflation hurts the poor (including Easterly and Fischer, 2000, using cross-country data, and Datt and Ravallion, 1998, using data for India).

Another concern is that the data being used relate to averages within countries. Aggregate inequality or poverty may change relatively little over time, and yet there are both gainers and losers at all levels of living. Indeed, in cases in which the survey data have tracked the same families over time (“panel data”), it is quite common to find considerable churning under the surface; Baulch and Hoddinott (2000) provide evidence of this for a number of countries. Some of this reflects measurement error, but clearly not all, since the changes seen in the data are partially explicable in terms of observable characteristics and measurable shocks.

One can find that many people have escaped poverty while others have fallen into poverty, even though the overall poverty rate may move rather little. For example, comparing household incomes immediately after the 1998 financial crisis in Russia with incomes of the same households two years earlier, one finds a seemingly small two percentage point increase in the poverty rate. However, this was associated with a large proportion of the population (18%) falling into poverty, while a slightly smaller proportion (16%) escaped poverty over the same period (Lokshin and Ravallion, 2000a).

People are often hurting behind the averages. Panel data and observations from the ground can reveal this, but the aggregate statistics cannot. It is important to know the aggregate balance of gains and losses, but it will be of little consolation to those suffering to be told that poverty is falling on average.

A further reason why low correlations are found between policy reform and changes in overall inequality is that starting conditions vary a lot between reforming countries. One potentially important way that countries differ initially is in the level of inequality itself (Benabou, 1996). The changes in distribution that we see in the data are not just random fluctuations around a constant long-run level of inequality. Indeed, there have been signs of a

pattern of inequality convergence in the developing world (and the world as a whole). Within-country inequality tends to be on a falling (rising) trend over time in countries with high (low) predicted levels of inequality at an initial base date (Ravallion, 2000b).⁶

The process of convergence toward medium inequality that we are seeing is not rapid. If the present trends continue, it will take about 15 years to close just half the gap between a high inequality country (with a Gini index of 60% say — roughly the level in Brazil) and a relatively low-inequality country (a Gini of 30%, a bit below the level in India around 1990). As always when generalizing from cross-country comparisons, there are deviations from these trends, both over time and across countries. And the shortage of observations in time makes it hazardous to identify trends. However, there are signs of inequality convergence in the data currently available, such that developing countries are tending to become more equally unequal — heading in the direction of the medium levels of inequality found in countries such as Jamaica, Tunisia, the Philippines and Ecuador (Ravallion, 2000b).

This has implications for the debate about who gains from liberalizing economic reforms. Suppose that reforming countries fall into two categories: those in which pre-reform controls on the economy were used to benefit the rich, keeping inequality artificially high, and those in which the controls had the opposite effect, keeping inequality low. The reforms may well entail sizable redistribution between the poor and the rich, but in opposite directions in the two groups of countries.

⁶ Predicted levels of initial inequality are used to help avoid the spurious signs of convergence that can arise from errors in measuring inequality (sometimes called “Galton’s Fallacy”); for further discussion see Ravallion (2000b). Other evidence of inequality convergence across countries can be found in Benabou (1996). Panizza (2000) finds evidence of inequality convergence across US states.

One might not be surprised then that the average impact of policy reform on inequality is not significantly different from zero. Yet there is abundant non-random distributional change going on under the surface of this average impact calculation. This arises when policy reforms shift the distribution of income in different directions in different countries. And it is not implausible that they would do so, given the diversity in initial conditions across developing countries at the time reforms begin.

Further research is needed to better understand the evident diversity in the impacts of growth on poverty and what role policies have played. A deeper analysis is called for of the role of initial conditions (including distribution) and how they interact with policy change. However, from what we know already, it is clear that finding zero average impact of policy reform on inequality does not mean that reforms are generally distribution neutral. An average is just that, and it is deceptive when one averages over large differences across countries in their starting points.

5. Inequality as an impediment to growth

There are also implications here for other areas of public policy that may well be needed to complement growth-oriented reforms. This is a large topic, about which much has been said over many decades. An important starting point for policy discussion is to understand the potential costs of high or rising inequality.

One way inequality can matter is through the rate of growth in average income. There are a number of arguments that have been made as to why one might find that greater equality is good for growth. A seemingly plausible argument points to the existence of credit market failures such that the people are unable to exploit growth-promoting opportunities for investment

in (physical and human) capital (see, for example, Benabou, 1996; Aghion et al., 1999). With declining marginal products of capital, the output loss from the market failure will be greater for the poor. So the higher the proportion of poor people there are in the economy the lower the rate of growth.⁷

Cross-country comparisons of growth rates provide some support for the claim that countries with higher initial inequality in incomes experienced lower rates of growth controlling for other factors such as initial average income, openness to trade and the rate of inflation.⁸ The robustness of this finding has been called into question in some studies. There are some difficult problems in identifying this relationship empirically, and the results in the literature have not been robust to alternative specifications, such as allowing for country fixed effects (Forbes, 1997; Li and Zou, 1998; Barro, 1999). There are a number of concerns about both the data and methods used.⁹ Spurious inequality effects in an aggregate growth regression can arise from the assumptions made in aggregating across micro-relationships, given credit market failures (Ravallion, 1998). The validity of the common assumption that initial inequality has a linear effect on aggregate growth is also questionable (Banerjee and Duflo, 1999, who find evidence

⁷ Banerjee and Duflo (1999) sketch a simple but elegant model of the inter-generational accumulation of wealth in which individuals start with an endowment from the previous generation but face a borrowing constraint. In this model, individual wealth at one date is a concave function of the individual's endowment, given declining marginal products of capital. Thus mean wealth in the economy at one date is a quasi-concave function of the vector of endowments left over from the previous period. It follows from well-known properties of concave functions that higher initial inequality will entail lower future mean wealth for any given initial mean wealth.

⁸ Examples include Persson and Tabellini (1994), Alesina and Rodrik (1994), Birdsall et al., (1995), Clarke (1995), Perotti (1996), Deininger and Squire (1998), and Deininger and Olinto (2000).

⁹ There is measurement error in both the levels and changes in measured income inequality, including comparability problems between countries and over time arising from survey error (sampling and non-sampling) and heterogeneity in survey design and processing (see, for example, Atkinson and Brandolini, 1999). One expects that this will matter more to tests which allow for country fixed effects than standard growth regressions, since the signal-to-noise ratio could well be quite low for changes in measured inequality in existing data sets.

that changes income inequality are bad for growth, whichever way the changes go). The choice of control variables in identifying the relationship is also open to question; for example, past tests of the effect of inequality on growth have controlled for the human capital stock, yet reducing investment in human capital is presumably one of the ways that inequality matters to growth.

On balance, the existing evidence using cross-country growth regressions appears to offer more support for the view that inequality is harmful to growth than the opposite view, which was the prevailing view in development economics for decades. That does not imply that any reduction in inequality will enhance growth; indeed, it can have the opposite effect if it comes at the expense of other factors that are also known to matter to growth. Reducing inequality by adding further distortions to external trade or domestic economy will have ambiguous effects on growth and poverty reduction.

However, given the concerns about past tests based on cross-country aggregates, it is of interest to ask if there might be some other way of testing for an effect of initial distribution on growth. Returning to the various theories about why initial distribution might matter one finds that many of the proposed models share some strong and testable implications for micro data. An example is the common feature of a number of the theoretical models based on credit-market failures that individual income or wealth at one date is an increasing concave function of its own past value. This implication of the class of models of distribution-dependent growth based on credit market failures is testable on micro panel data; Lokshin and Ravallion, 2000b, provide supportive evidence in panel data for Hungary.¹⁰

¹⁰ Distribution-dependent growth is possible without nonlinear income or wealth dynamics at the micro level. Such models have been driven instead by their assumptions about political-economy, notably the way initial distribution influences the balance of power over public spending (Alesina and Rodrik, 1994; Persson and Tabellini, 1994).

As with macro tests of whether inequality is bad for growth, finding the appropriate nonlinearity in household-level income dynamics would not constitute a case for public redistribution as a means of stimulating aggregate growth. However, with the right data, dynamic micro models of income or consumption can be augmented to allow for (possibly endogenously placed) public programs.¹¹ Micro structural modeling of growth in the presence of specific redistributive interventions may offer hope of a deeper understanding of the policy implications.

6. Inequality as an impediment to pro-poor growth

Inequality also matters to the pace of poverty reduction that is achieved at any given rate of growth. Even in the countries in which inequality is rising with growth in average living standards, poverty is falling on average. But it typically falls at a much slower rate than in countries experiencing more equitable growth. The median rate of decline in the proportion of the population living below \$1 per day amongst countries with both rising average income and rising inequality was 1.3% per year. By contrast, the median rate of poverty reduction was seven times higher, at about 10% per year, amongst the countries that combined growth in average living standards and falling inequality (Table 1). Amongst contracting economies it also mattered greatly what was happening to inequality; on average, when inequality was rising while average living standards fell, the poverty rate was rising by a dramatic 14% per year, while with falling inequality the poverty rate rose by less than two percent on average.

Calculations such as Table 1 are mechanical. They rest on the mathematical properties of the poverty measure, which is a function of the mean of the distribution on which the measure is

¹¹ For example, research on government anti-poverty programs in China suggests that there have been dynamic consumption gains from the program at farm-household level (Jalan and Ravallion, 1998).

based and the Lorenz curve of that distribution, roughly speaking how much “inequality” there is in the distribution. From the information in Table 1 it cannot be concluded that the growing economies with rising inequality could have achieved something like a 9.6% rate of poverty reduction, instead of 1.3% on average, if only inequality had been falling. For that to hold one requires the assumption that the growth rate would have been no lower with falling inequality. Again that depends critically on exactly how the reduction in inequality is achieved.

Table 1: Diverse impacts on poverty underlie the fact that changes in inequality are uncorrelated with economic growth

		What is happening to average household income between the surveys?	
		Falling	Rising
What is happening to inequality between the surveys?	Rising	(16% of spells) Poverty is rising at a median rate of 14.3% per year	(30% of spells) Poverty is falling at a median rate of 1.3% per year
	Falling	(26% of spells) Poverty is rising at a median rate of 1.7% per year	(27% of spells) Poverty is falling at a median rate of 9.6% per year

Note: Based on 117 spells between two household surveys covering 47 developing countries in the 1980s and '90s. Poverty is measured by the % of the population living below \$1/day at 1993 purchasing power parity. Inequality is measured by the Gini index.

Even when inequality is not rising, a high initial level of inequality can stifle prospects for pro-poor growth. In an economy where inequality is persistently low, one can expect that the poor will tend to obtain a higher share of the gains from growth than in an economy in which inequality is high. To put this another way, an important determinant of the rate of poverty reduction is the distribution-corrected rate of growth in average income, given by a measure of initial equality (100 minus the measure of inequality) times the rate of growth. Indeed, the

distribution-corrected growth rate knocks out the simple rate of growth when both are used in a regression for the rate of poverty reduction between surveys across countries and time (Ravallion, 1997). It is not the rate of growth that matters, but the distribution-corrected rate of growth.

One can represent this in the form of a very simple model, which gives the proportionate rate of change in measured poverty (r) over a given interval of time as:

$$r = \beta(1-I)g$$

where I is an index of inequality (between zero and one) at the beginning of a period of time, over which average income grows at a rate g . Measuring r by the annual percentage change in the proportion of the population living below \$1 per day, I by the Gini index, and measuring g by the rate of growth in the real value of mean income from the survey, I obtained an estimate of -3.74 for β , with standard error of 0.68 , using 124 periods of time between household surveys in developing countries; this is very close to the estimate in Ravallion (1997) on an earlier and smaller data set. Again, a possible concern about this estimate is that there may be common (negatively correlated) measurement errors in r and g . Using again the growth rate in private consumption per capita from the national accounts as the instrumental variable for the growth rate in the survey means and dropping the observations for Eastern Europe and Central Asia one gets a lower estimate of β , namely -2.94 , with standard error of 1.18 .

The elasticity of poverty to growth declines appreciably as the extent of initial inequality rises. Consider a per capita growth rate of (say) 2% per annum (roughly the mean for low-income countries in the 1990s). With $\beta = -3$ a country with high inequality (a Gini index of 60% say) can expect to see a rate of poverty reduction of 2.4% per year. By contrast, a relatively low-inequality country, with a Gini of 30%, can expect a rate of poverty reduction of 4.2% per year.

Of course, other factors matter besides the distribution-corrected rate of growth, such as economic or policy changes that resulted in changes in distribution. We saw in Table 1 just how much changes in inequality matter.

The above results are unrevealing about what specific aspects of inequality matter. The theoretical arguments based on credit-market failures point to the importance of asset inequality, not income inequality per se, and there is evidence of strongly adverse effects of asset inequality in growth (Ravallion, 1998, using regional data for China; Birdsall and Londono, 1997, and Deininger and Olinto, 2000, both using cross-country data).

Some clues have been found by comparing rates of poverty reduction across states of India, for which we can compile a long series of reasonably comparable survey data back to about 1960. The analyses of these data confirm that economic growth has tended to reduce poverty in India. Higher average farm yields, higher public spending on development, higher (urban and rural) non-farm output and lower inflation were all poverty reducing (Ravallion and Datt, 1999). However, the response of poverty to non-farm output growth in India has varied significantly between states. The differences reflected systematic differences in initial conditions. Low farm productivity, low rural living standards relative to urban areas and poor basic education all inhibited the prospects of the poor participating in growth of the non-farm sector. Rural and human resource development appear to be strongly synergistic with poverty reduction though an expanding non-farm economy.

Economic reforms in developing countries can create opportunities for poor people. But only if the conditions are in place for them to take advantage of those opportunities will absolute poverty fall rapidly. Reforms often increase demand for assets, such as relatively skilled labor, that are inequitably distributed; there is evidence that disparities in returns to investment do not

appear to favor the poor either (van de Walle, 2000, for Viet Nam). Thus economic reforms can readily by-pass the poor. The conditions for pro-poor growth are closely tied to reducing the disparities in access to human and physical capital, and sometimes differences in returns to assets, that create income inequality and probably also inhibit overall growth prospects.

Policy discussions have often emphasized the need to combine policies conducive to growth with investments in the human and physical assets of poor people (see, for example, World Bank, 1990, 2000b; Bruno et al., 1995; Kanbur and Squire, 1999). However, many questions remain unanswered. What specific interventions should have priority in specific circumstances? Should reform be redesigned or delayed when initial conditions are not favorable, and take time to change? Further research is needed on the contingent factors that influence the extent to which the poor are able to participate in the opportunities created by growth-oriented policies.

7. Global progress against poverty?

The above arguments help in understanding what has been happening to the poverty aggregates in the developing world. The 1990s saw reasonable growth in the developing world as a whole; the overall rate of growth in real per capita private consumption for the low- and middle-income countries over 1990-97 was 2.6% per year. Yet 24% of the population of the developing world lived below \$1 per day in 1998 (at 1993 Purchasing Power Parity), which was only 3-4 percentage points lower than 10 years earlier (Chen and Ravallion, 2000). The total number of poor by this standard was about the same in 1998 as 1987, with roughly 1.2 billion people lived below \$1 per day.

Why was there not more progress against poverty? In the countries where growth occurred it tended to be poverty reducing, though more so in low inequality countries and countries that avoided rising inequality with growth. Differences in how much impact a given rate of growth has on poverty reflect initial inequalities in incomes, education attainments and other dimensions, including geographic differences within countries.

In the same way that rising inequality in one country can put a break on prospects for poverty-reducing growth, rising inequality in the world inhibited overall poverty reduction. The world Gini index increased from 63% in 1988 to 66% in 1993 (Milanovic, 2000). This was enough to wipe out a large share of the gains to the world's poor from global economic growth.

Why was world inequality rising? An important reason is rising inequality between countries. This accounts for three-quarters of the increase in the world Gini index from 1988 to 1993 (Milanovic, 2000). The growth divergence we have seen in the 1980s and 1990s — whereby growth rates have tended to be lower in poorer countries (Pritchett, 1997) — is clearly an important reason for the low rate of aggregate poverty reduction despite aggregate growth. In short, too little of the growth was in the poorest countries.

8. Conclusions

The seemingly opposing positions taken in this debate are not as hard to reconcile as it might seem at first sight. The poor typically do share in the benefits of rising affluence, and they typically so suffer from economic contraction. However, there is a sizable variance around the “typical” outcomes for the poor. One source of variance is that “economic growth” as measured in the national accounts is not always reflected in average household living standards as measured in surveys, at least in the short run.

But the sources of the heterogeneity in outcomes for the poor go deeper than that. There are also differences in initial inequalities between countries, and between regions within countries, that create sizable differences in how much the poor share in aggregate growth or contraction. The churning that is found under the surface of the aggregate outcomes also means that there are often losers during spells of growth, even when poverty falls on average. While growth-promoting policies may well have close to zero average impact on inequality, this is perfectly consistent with sizable distributional impacts in specific countries, albeit in different directions. The finding of zero correlation between changes in inequality and growth found in various papers in the literature is perfectly consistent with strong and pervasive distributional effects. There is truth in both the quotes at the beginning of this paper, though each is potentially deceptive on its own.

These observations point to the importance of more micro, country-specific, research on the factors determining why some poor people are able to take up the opportunities afforded by an expanding economy — and so add to its expansion — while others are not. Individual endowments of physical and human capital have rightly been emphasized in past work, and suggest important links to policy. Other factors that may well be equally important have received less attention, such as location, social organization and exposure to uninsured risk.

While good policy making for fighting poverty must obviously be concerned with the aggregate impacts on the poor, it cannot ignore the diversity of impacts underlying the averages, and it is here that good micro empirical work can help. That diversity also holds potentially important clues as to what else needs to be done by governments to promote poverty reduction, on top of promoting economic growth.

References

- Aghion, Philippe, Eve Caroli and Cecilia Garcia-Penalosa, 1999, "Inequality and Economic Growth: The Perspectives of the New Growth Theories", *Journal of Economic Literature* 37(4): 1615-1660, 1999.
- Alesina, Alberto and Dani Rodrik, 1994, "Distributive Politics and Economic Growth", *Quarterly Journal of Economics* 108: 465-90.
- Atkinson, A.B., and A. Brandolini, 1999, "Promise and Pitfalls in the Use of 'Secondary' Data Sets: Income Inequality in OECD Countries," mimeo, Nuffield College Oxford.
- Banerjee, Abhijit and Esther Duflo, 1999, "Inequality and Growth: What Can the Data Say?", mimeo, Department of Economics, MIT.
- Barro, Robert, 1999, "Inequality, Growth and Investment", NBER Working Paper 7038.
- Baulch, Bob and John Hoddinott, 2000, "Economic Mobility and Poverty Dynamics in Developing Countries," *Journal of Development Studies* 36(6): 1-24.
- Benabou, Roland, 1996, "Inequality and Growth", in Ben Bernanke and Julio Rotemberg (eds) *National Bureau of Economic Research Macroeconomics Annual*, Cambridge: MIT Press, pp.11-74.
- Bhalla, Surjit, 2000, "Growth and Poverty in India — Myth and Reality", available from <http://www.oxusresearch.com/economic.asp>.
- Birdsall, Nancy and Juan Luis Londono, 1997, "Asset Inequality Matters: An Assessment of the World Bank's Approach to Poverty Reduction." *American Economic Review, Papers and Proceedings* 87(2): 32-37.
- Birdsall, Nancy, D. Ross and R. Sabot, 1995, "Inequality and Growth Reconsidered: Lessons from East Asia", *World Bank Economic Review* 9(3): 477-508.
- Bruno, Michael, Martin Ravallion and Lyn Squire, 1998, "Equity and Growth in Developing Countries: Old and New Perspectives on the Policy Issues", in *Income Distribution and High-Quality Growth* (edited by Vito Tanzi and Ke-young Chu), Cambridge, Mass: MIT Press.
- Chen, Shaohua and Martin Ravallion, 2000, "How Did the World's Poorest Fare in the 1990s?" Policy Research Working Paper 2409, World Bank (<http://wbln0018.worldbank.org/>)

- Research/workpapers.nsf/WPPoverty/?OpenView&count=500000&Topic=Poverty).
- Clarke, George R.G., 1995, "More Evidence on Income Distribution and Growth",
Journal of Development Economics 47: 403-428.
- Datt, Gaurav (1999): "Has Poverty in India Declined since the Economic Reforms?,"
Economic and Political Weekly 34 (December 11-17).
- Datt, Gaurav and Martin Ravallion, 1992, "Growth and Redistribution Components of
Changes in Poverty: A Decomposition with Application to Brazil and India,"
Journal of Development Economics, 38: 275-295.
- Datt, Gaurav and Martin Ravallion, 1998, "Farm Productivity and Rural Poverty in
India", *Journal of Development Studies* 34: 62-85.
- Deininger, Klaus and Pedro Olinto, 2000, "Asset Distribution, Inequality and Growth", Policy
Research Working Paper 2375, World Bank.
- Deininger, Klaus and Lyn Squire, 1998, "New Ways of Looking at Old Issues:
Inequality and Growth," *Journal of Development Economics* 57(2): 259-87.
- Dollar, David and Aart Kraay, 2000, "Growth is good for the poor", World Bank, Washington
DC.
- Easterly, William and Stanley Fischer, 2000, "Inflation and the Poor," *Journal of Money Credit
and Banking*, forthcoming.
- Fields, Gary , 1989, "Changes in poverty and inequality in developing countries", *World Bank
Research Observer*, 4:167-186.
- Forbes, Kristin J., 1997, "A Reassessment of the Relationship Between Inequality and
Growth," mimeo, Department of Economics, MIT.
- Jalan, Jyotsna and Martin Ravallion, 1998, "Are There Dynamic Gains from a Poor-Area
Development Program?" *Journal of Public Economics*, 67(1): 65-86.
- _____ and _____, 1999, "Geographic Poverty Traps? A
Microeconomic Model of Consumption growth in Rural China," mimeo, Development
Research Group, World Bank.
- Kanbur, Ravi and Lyn Squire, 1999, "The Evolution of Thinking about Poverty: Exploring the
Interactions," Department of Agricultural, Resource and Managerial Economics Paper
99-24, Cornell University.

- Li, Hongyi and Heng-fu Zou, 1998, "Income Inequality is not Harmful to Growth: Theory and Evidence," *Review of Development Economics* 2(3): 318-334.
- Lokshin, Michael and Martin Ravallion, 2000a, "Welfare Impacts of Russia's 1998 Financial Crisis" in *Economics of Transition*, Vol. 8(2): 269-295.
- Lokshin, Michael and Martin Ravallion, 2000b, "Short-Lived Shocks with Long-Lived Impacts? Nonlinear Household Income Dynamics in a Transition Economy," Policy Research Working Paper, World Bank (<http://wbln0018.worldbank.org/Research/workpapers.nsf/WPPoverty/?OpenView&count=500000&Topic=Poverty>).
- Milanovic, Branko, 2000, "True World Income Distribution: 1988 and 1993: First Calculations Based on Household Surveys Alone", Policy Research Working Paper 2244, World Bank, 1999.
- Panizza, Ugo, 2000, "Convergence in Income Inequality," Research Department, Inter-American Development Bank.
- Perotti, Roberto, 1996, "Growth, Income Distribution and Democracy: What the Data Say," *Journal of Economic Growth* 1(2): 149-87.
- Persson, Torsten and Guido Tabellini, 1994, "Is Inequality Harmful for Growth?" *American Economic Review* 84: 600-621.
- Pritchett, Lant, 1997, "Divergence, Big Time", *Journal of Economic Perspectives* 11, 3-17.
- Ravallion, Martin, 1995, "Growth and Poverty: Evidence for Developing Countries in the 1980s", *Economics Letters*, 48: 411-417.
- _____, 1997, "Can High Inequality Developing Countries Escape Absolute Poverty?" *Economics Letters* 56, 51-57.
- _____, 1998, "Does Aggregation Hide the Harmful Effects of Inequality on Growth?" *Economics Letters*, 61(1), 73-77.
- _____, 2000a, "Do National Accounts Provide Unbiased Estimates of Survey-Based Measures of Living Standards?" Development Research Group, World Bank.
- _____, 2000b, "Inequality Convergence", Development Research Group, World Bank.
- _____, 2000c, "Should Poverty Measures be Anchored to the National Accounts?", *Economic and Political Weekly*, September.

- Ravallion, Martin and Shaohua Chen, 1997, "What Can New Survey Data Tell Us about Recent Changes in Distribution and Poverty?," *World Bank Economic Review*, 11(2): 357-82.
- Ravallion, Martin and Gaurav Datt, 1999, "When is Growth Pro-Poor? Evidence from the Diverse Experience of India's States", Policy Research Paper 2263, World Bank.
- Squire, Lyn. 1993. "Fighting Poverty," *American Economic Review, Papers and Proceedings* 83(2): 377-382.
- van de Walle, Dominique, 2000, "Are Returns to Investment Lower for the Poor? Human and Physical Capital Interactions in Rural Viet Nam," Policy Research Working Paper WPS 2425, World Bank, Washington DC.
- World Bank, 1990, *World Development Report: Poverty*. New York: Oxford University Press.
- World Bank, 2000a, *World Development Indicators*. Washington DC: The World Bank.
- World Bank, 2000b, *World Development Report: Attacking Poverty*. New York: Oxford University Press.

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